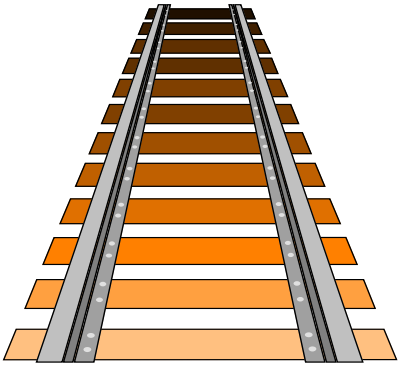
504683/2020/O/oDYCPLO/PLG/HQ/SR



WORK STUDY TO REVIEW THE STAFF STRENGTH IN TRACKMAN CATEGORY OF SSE/P.WAY/TJ TIRUCHCHIRAPPALLI DIVISION

SOUTHERN RAILWAY

PLANNING BRANCH

G.275/WSSR- 772021/2020-21

WORK STUDY TO REVIEW THE STAFF STRENGTH IN TRACKMAN CATEGORY OF SSE / P.WAY / TJ – TIRUCHIRAPPALLI DIVISION

STUDIED BY

WORK STUDY TEAM

OF

PLANNING BRANCH

DECEMBER 2020

(i)

I N D E X

(i)
ACKNOWLEDGEMENT

The work study team acknowledges the guidance and Co-operation extended by ADRM/TPJ, Sr.DEN (Co-ord)/TPJ, Sr DEN/S/TPJ, ADEN/TJ, SSE/P.Way/TJ and other Engineering staff of P.Way / TJ in conducting and completing the work study in time.

(ii)
AUTHORITY

Annual Programme of Work studies approved for the year 2020 – 21.

(iii)
TERMS OF REFERENCE

Work Study to review the staff strength in Trackman category at SSE/P.Way/TJ section – TPJ Division.

(iv)
METHODOLOGY

The Work study team has applied the following methodologies in conducting the work study.

(1) Collection and compilation of data.

(2) Discussion with field officials

(3) Interaction with ADEN/TJ & SSE/P.Way/TJ

(4) Applying rational formula to arrive at the requirement of gang strength.

(5) Identifying the activities potential for outsourcing.

(v)
SUMMARY OF RECOMMENDATIONS

The following posts are identified as surplus which may be surrendered and credited to the vacancy bank.

Sl. No.	Category	Grade pay (Rs.)	No. of posts
1	SSE	4600	1
2	Bricklayer-Gr-III	1900	1
3	Bricklayer-Helper	1800	1
4	Track Maintainer-IV	1800	14
TOTAL			**17**

(TOTAL-17 Posts)

CHAPTER – I

1.0 INTRODUCTION

1.1 SSE/PWay/TJ is a field Unit of Civil Engineering Department to look after the maintenance of track and other allied works.

1.2 CONTROL: This unit is under the overall control of Sr.DEN/Co-ord/TJ and under the direct supervision of ADEN/TJ.

1.3 Permanent Way is the major activity of the Engineering branch which is entrusted with the periodical maintenance of tracks, bridges, LC gates and other assets. A well maintained track is very essential for speedy, safety and efficient operation of trains. Continuous monitoring and Inspection is warranted daily in ensuring a reliable permanent way.

1.4 The modern technologies led the track maintenance techniques from the era of pick axe & shovel to the era of modern mechanized Track maintenance. The interconnection with S&T and TRD branches is a new development in the team work. The equipments for testing the track have become sophisticated not only in detecting the failures but also in preventive check. It will be worth mentioning that the use of Ultrasonic Flaw Detector (USFD) equipment detects even the minute air crack and blowholes in the rail which might develop into a rail crack leading to derailments.

1.5 The magnitude of outsource in maintenance activities paved way for a meticulous calculation to arrive at the manpower requirement in commensurate with the major developments taken place in the field of track maintenance.

1.6 The manpower requirements of SSE/PWI/TJ is arrived based on the TRMS formula of CMCNTM, approved by Railway Board vide letter No.95/CE-1/CWS/2/ Vol.II/ Pt.II dt. 06.03.2006 which recommends incorporating the effects of Modernization once in 5 years such as introduction of more number of shoulder ballast cleaners, improving rail-weld technology, better design of SEJs, maintenance free level crossing track structure.

1.7 Substantial investments on Track machines over the years to improve the quality of Track structure and curtailment in the need of its annual maintenance led to the reduction in the number of staff deployed on the track maintenance activities.

1.8 **JURISDICTION:** SSE/P.Way/TJ unit Jurisdiction is as follows:

ROUTE	SECTION	LINE	LOCATION FROM		LOCATION TO	
			KM	M	KM	M
MSB-VM-MV-TJ-TPJ-RMM	MV-TJ Jn	SL	354	400	354	990
	TJ-TPJ Jn	UP	354	990	376	0
		DN	354	990	376	0
TJ-NGT-KIK	TJ-NGT Jn	SL	0	300	30	600
NMJ-MQ	NMJ-MQ Jn	SL	0	0	13	750

1.9 **GANG DETAILS**:

Gang No	Jurisdiction		Length Kms
	From (Km)	To (Km)	
Gang 1	354.40	356.70	2.30
Gang 2	356.70	363.20	6.50
Gang 3	363.20	369.40	6.20
Gang 4	369.40	376.00	6.60
Gang 5	0.30	6.70	6.40
Gang 6	6.70	13.10	6.40
Gang 7	13.10	20.00	6.90
Gang 8	20.00	26.70	6.70
Gang 9	26.70	30.60	3.90
Gang 10	0.00	6.70	6.70
Gang 11	6.70	13.98	7.28
Total			65.88

1.10 VARIOUS TYPES OF TRACK MACHINES:

UNIMAT	-	Used for tamping all plain track including points and crossings. (Points & crossings tamping machine)
BCM	-	Used for deep screening of the ballast in the track. (Ballast cleaning machine)
CSM	-	Used for tamping all plain track excerpt points and crossing. (Continuous tamping machine)
TRT	-	Used to replace the complete track with new rails and sleepers. (Track relaying train)
BRM	-	Used to regulate the ballast available in the track. (Ballast regulating machine)
T-28	-	Used to replace the existing points and crossing portion with new assembled points and crossings.
UTV	-	Used to pick up the released sleeper & rails lying side of the Track and unload the same for further disposal. (Utility track vehicle)
DTS	-	Used to consolidate the track. (Dynamic track stabiliser)
SBCM	-	Used to clean the ballast in the shoulder area. (Shoulder ballast cleaning machine)

DETAILS OF TRACK MACHINES WORKS IN SSE/PWAY/TJ SECTION BETWEEN 1/09/2019 TO 31/08/2020

S.No	Name of the Machine	Progress of works
1	Ballast cleaning machine	38,612 m
2	Duomatic machine	2,98,100 PSC
3	DGS Machine	1,27,450 m
4	Unimat	50.7 units+2400m
5	UTV	349 rails + 25 PSC
6	CSM	8,550 PSC

1.11 **ABSTRACT DETAILS OF SANCTIONED AND ACTUAL STRENGTH:**

(As per Sr DPO/TPJ dated 25.09.20)

SL No	CATEGORY	LEVEL	SAN	ACT	VAC/EXC
1	SSE/PWAY/TJ	7	4	1	3
2	JE/PWAY/TJ	6	1	2	+1
3	Trainee/JE/PWAY	6	0	2	+2
4	BLACK SMITH:				
	Sr Tech	6	0	1	+1
	Tech-Gr I	5	2	0	2
	Tech Gr-II	2	0	2	+2
5	Welder- Tech-Gr-III	2	2	1	1
6	Brick Layer Tech-Gr-III	2	1	0	1
7	Assistant Brick Layer	1	1	0	1
8	PAINTER:				
	Tech-Gr-II	4	1	0	1
	Tech-Gr-III	2	0	1	+1
	Assistant	1	1	0	1
9	Track Maintainer-I	5	15	4	11
10	Track Maintainer-II	4	29	24	5
11	Track Maintainer-III	2	29	30	+1
12	Track Maintainer-IV	1	65	93	+28
13	Trainee TM-IV	1	0	3	+3
14	Substitutes	1	0	2	+2
TOTAL			151	166	+15

The main components of permanent way or track are rails, sleepers, ballast, formation and fittings & fastenings.

- ✓ **Rails** act as girders to transmit the wheel loads of trains to the sleepers.
- ✓ **Sleeper**s hold the rails in proper position and provide the correct gauge with the help of fittings and fastenings and transfer the load to the ballast.
- ✓ **Ballast** is placed on prepared ground known as formation, which gives a uniform level surface, provide drainage and transfers the load to larger area of formation.

- ✓ **Formation** gives a surface, where the ballast rests and transmits the total load of the track and that of the trains moving on it to the ground below.

1.12 **Characteristics of a good Track:**

(i) Sound condition of rails, sleepers and fittings.

(ii) All fittings are available and properly tightened.

(iii) Adequate good quality and clean ballast under the sleepers and also around it with full shoulder width.

(iv) Wear in rails, horizontal or vertical should be within limits.

(v) Alignment of rails should be perfect and other defects should be within permissible limits.

(vi) Longitudinal and cross levels should be in good condition and within allowable limits.

1.13 **Annual programme of track maintenance**

The following programme is normally followed annually on Indian Railways for systematic maintenance of track as per IRPWM.

Period	Work
1. Post-monsoon attention. For about six months after end of monsoon.	a) Attention to run down length in the entire gang beat to restore section to good shape.
	b) One cycle of through packing from one end of the gang beat to the other end including overhauling of 1/3 to ¼ of the beat.
	c) Attention during the monsoon; For about 4 months cleaning of side drains, catch water drains, repairs to bank and picking up of slacks.
2. Pre-monsoon attention: for about 2 months prior to break monsoon.	a) Attention to track as required; picking up of slacks.
	b) Attention to side drains, catch water drains and water ways.
3. Lubrication of rail joints, gap adjustment and curve re-alignment	Patrolling of track during heavy rains.

1.14 **Need for Mechanized Maintenance:**

The mechanized maintenance of track implies the deployment of track machines for day to day track maintenance works which are otherwise done by manual labour. The need for mechanized maintenance of track is felt due to the following reasons.

(i) With the introduction of concrete sleepers, the track structure has become very heavy therefore it becomes difficult for the gang men to lift the track.

(ii) There are chances of breakage of concrete sleepers if the same are hit by gang man using the beaters.

(iii) Manual packing is very hard and strenuous job. It is not possible with manual maintenance to get good quality track which is essential for high speed operations.

1.15 **Inspection of track:**

Purpose of Inspection:

With the running trains, there is continuous degradation of track due to vibrations. The packing of sleeper gets disturbed, the fastenings become loose or some time come out of sleepers and there is general wear and tear in rails and sleepers.

The purpose of inspection of track is to detect various flaws such as looseness of packing, loose or missing fittings, wear in rail, disturbance in cross levels and versions in curves, deficiency of ballast, unusual movements in long welded rails, inadequate or excessive gaps at joints, defects at level crossings such as inadequate gap at check rail and condition of track and bridges in general. In IRPWM it is explained in detail, the inspection schedules for each Railway officials, supervisors and maintenance staff.

1.16 **Methods of Inspections:**

Various methods adopted for inspection are as under:

(a) By Push Trolley/ Motor Trolley

(b) By Engine of a fast train

(c) By rear most vehicle of a train and

(d) By Track recording Car by Oscillograph Car and OMS instrument

1.17 **Latest implementation of track improvements:**

Track Monitoring:

Monitoring of track is carried out periodically using RDSO's track recording cars and Oscillograph cars and portable Oscillation monitoring system (OMS 2000) at regular intervals to assess the condition of the track in good fettle and safe for passage of trains. PC based OMS systems are being used as part of modernization. Detailed analysis of results of these runs has enabled this Railway to progressively improve the quality of track. Computer program has been developed to generate exception reports to enable field staff for early identification of location for planning maintenance.

Track Management System (TMS)

A web based Track Management System is implemented in all divisions as part of e-Governance and inspections of field staff are made in e-form and computer based monitoring of various track maintenance activities is introduced. Staffs are provided with note books and Data card upto field level and necessary training is imparted.

Indian Railways Projects sanctions and Management (IRPSM):

A web based IRPSM is implemented to process for works programme for all plan heads including Track Renewals as part of e-Governance. This facilitates access of data at all levels and progress monitoring of various sanctioned works/sanction of works.

1.18 The magnitude of outsource in maintenance activities paved way for a meticulous calculation to arrive at the manpower requirement in commensurate with the major developments taken place in the field of track maintenance.

The manpower requirement of this unit is arrived at, based on

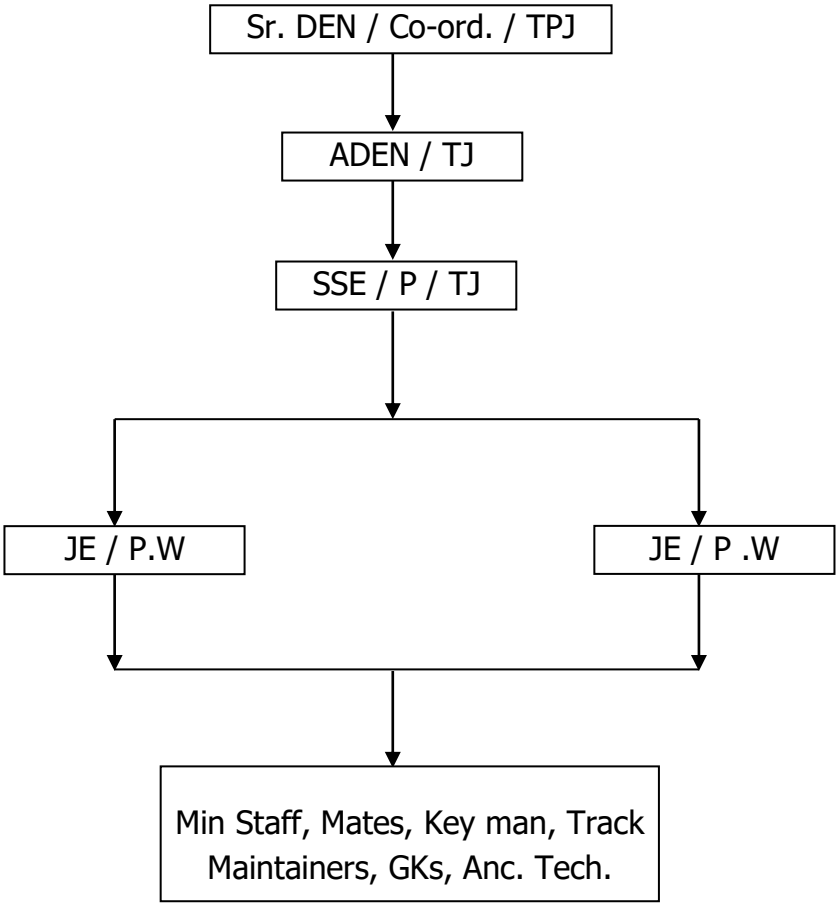
- The Rationalised formula, which was approved by Railway Board Order No. 95/CE-1/CWS/2/Vol.II/Pt.11 dt.06.03.06 in case of trackmen.
- Yard sticks / need basis in case of other category of staff.

CHAPTER – II

2.0 PRESENT SCENARIO

2.1 Organization:

The Engineering department of TPJ division is under the control of Sr.DEN (Co-ord)/TPJ. The Permanent Way section of TJ which is managed by SSE/PWAY/TJ is under the direct & general control of ADEN/TJ.



2.2 The duties of Supervisors and Technical staff in P. Way section are:

i. Duties of SSE/P.way [prescribed in para118 -135 of Part-B of IRPWM]

- Responsible for maintenance and inspection of track and safe condition for traffic.

- Execution of all works incidental to track maintenance including track relaying works.
- Accountal and periodical verification of stores and tools.
- Maintenance of land boundary between stations and at unimportant stations.
- Co-ordination with the works, Bridge, Signaling and Electrical staff.
- Accompanying on Inspection with higher officials.
- Testing of running qualities of track.
- Inspection of Gangs, Level Crossings, points and X-ings, curve inspection
- Foot plate inspection, Rear vehicle inspection, Foot inspection.
- Accompanying OMS/TRC (RDSO) Inspection.
- Check on patrolling
- Maintenance of station yards.
- Witnessing payment to staff
- Maintenance of Records
- Custodian of stores etc.
- Apart from above P.Way maintenance activities Staff Welfare viz. promotion, claiming of salary, supply of equipment and uniform, procurement of materials, issuing of materials scrap delivery.

ii. Duties of JE/P.way: [prescribed in para136 -145 of Part-B of IRPWM]

- Inspection and maintenance of track in a safe and satisfactory condition for traffic, including execution of all works, incidental to track maintenance.
- Execution of special works, such as a) Renewal, Directed Track maintenance curve re-alignment, deep screening etc.
- To assist the SSE/P.way.
- Co-ordination with Works, Bridge and staff of other departments.
- Inspection of Gangs, Level crossings, Points and crossings, Curves, foot plate inspection, rear vehicle inspection and foot inspection.

iii. P.Way Mistry /Track mate: [prescribed in para136-166 of Part-B of IRPWM]

- Knowledge of Rules and Signal
- Safety of the Track
- Equipments at site of work
- Muster and Gang Charts/Diary Books
- Observance of sleepers packing during passage of train.
- Precaution when view is obstructed
- Tidiness of section and Safe custody of tools
- Action when line is unsafe or in the event of accident
- Patrolling during abnormal Rainfall
- Commencing work affecting safety of train
- Weekly inspection of Gang length by mate.
- Preventing Tress pass and theft of P.way fittings
- Relief arrangements in emergencies
- Assistance to S&T staff
- Assistance in protection of train and Assistance in placing fog signals
- Responsibilities of the mate in LWR track

iv. Duties of Key-man: [prescribed in para167 -170 of Part-B of IRPWM]

- Key-man's daily inspection
- Equipment of key-man
- Rectifying the defects whichever possible by him.
- Reporting to Mate and PWI about the defects which require assistance for attending.
- In case of serious defects protection of Track & informing as per rules.
- Work at unmanned level crossings.
- Assisting mate after completing his routine inspection.
- Any materials found fallen safe custody and disposal.
- Apart from daily inspection, he should ensure tightness of fittings in Systematic manner.

2.3 Track Maintenance Methods:

The para 228 of IRPWM prescribes the system of maintenance for concrete sleeper track as given below. The following 3-tier system of track maintenance shall be adopted on sections nominated for mechanized maintenance.

They are -

1. On track machines (OMU)
2. Mobile Maintenance unit (MMU)
3. Sectional gangs

The mobile maintenance units shall comprise of two groups:-

MMU-1:- One for each PWI section

MMU-2:- One for each Sub-division

MMU-1 shall be a Rail cum road vehicle with a PWI in-charge with a jurisdiction of 40-50 Km. double line and 90-100 Km for single line for various works including need based spot tamping and rail welding.

MMU-2 shall be a road vehicle based unit with each sub-division for reconditioning of turnout and minor repairs to the equipments of MMU.

2.4 Existing Maintenance Practices on IR

As on date, the practice of maintenance can be briefly summarized as follows;

(a) In sections where relaying with PSC sleepers has been done,
   i. Tamping with machines as and when machines are available, plus
   ii. Conventional system of maintenance

(b) In sections where relaying has not been done,
   i. Only conventional system of maintenance is being used.

2.5 The role of open line organization of Engineering Department in IR mainly meant for maintenance/ strengthening/ modification of existing infrastructure i.e. track for permitting higher speeds and heavier Loads.

The manual maintenance of the track has given way to highly mechanized maintenance practices that has become inevitable for the following reasons.

- The high safety standards that can be achieved
- The capability for higher axle load, speed etc.,
- The overall economy in cost of maintenance
- The accuracy in testing, checking and inspections that can be achieved through mechanization.
- The necessity to avoid harsh physical work under inclement weather and isolated locations.
- The speed of maintenance
- The need to carry out the maintenance works within the constraints of time for line block etc.,

2.6 The provisions of "Small Track Machines Manual":-

The para1.3.2 says that the "Requirement of Manpower doesn't include Leave reserve". Further, the para1.3.3 stipulates that the Creation of posts for operation and maintenance of small track machines should be done by surrender of equivalent money value of live revenue charged posts of Gang man /other category involved in the track maintenance. The component of unskilled staff being created should be barest minimum. The proportion of skilled personnel should form at least 75% of the total posts to be created.

2.7 The present deployment of Gang mates, Key men and Trackmen is given below.

Gang No	STN	Jurisdiction			Sanction					Actual				
		From	To	Length in Kms	Gmate	Key man	Trackmen	GK	Total	Gmate	Key man	Trackmen	GK	Total
5	TJ	354/400	356/700	2.3	1	2	13	0	**16**	0	13	0	0	**13**
6	TJ	356/700	363/200	6.5	1	2	12	2	**17**	0	0	8	2	**10**
7	ALK	363/200	369/400	6.2	1	2	12	2	**17**	0	2	7	2	**11**
8	BAL	369/400	376/000	6.6	1	2	12	6	**21**	0	2	9	6	**17**
1	MAV	0/300	6/700	6.4	1	1	7	4	**13**	1	1	5	4	**11**
2	KXO	6/700	13/100	6.4	1	1	7	8	**17**	1	1	2	8	**12**
3	SMM	13/100	20/000	6.9	1	1	8	6	**16**	0	2	2	6	**10**
4	KYV	20/000	26/600	6.6	1	1	7	4	**13**	0	1	2	4	**7**
5	NMJ	26/600	30/600	4	1	1	9	4	**15**	1	1	5	4	**11**
6	MQ1	0/500	6/600	6.1	1	1	8	6	**16**	0	1	2	3	**6**
7	MQ2	6/600	13/900	7.3	1	1	10	6	**18**	1	0	3	3	**7**
TOTAL					11	15	105	48	**179**	4	24	45	42	**115**

2.8 TJ SECTION FEATURES:

S. No	TJ Section Features	
1	Route	VM-MV-TJ-TPJ-RMM TJ-NGT-KIK & NMJ-MQ
2	Total length of section	65.88 KM
3	Sub Section Jurisdiction:	
	SSE/PWAY/BAL	354/900-376/000 TJ-AYN (UP&DN)-No of Gangs-4
	SSE/PWAY/NMJ	0/300-30/500 (TJ-NMJ) LWR M+8(TJ-AYN, NMJ-MQ) No of Gangs-7
4	No of crossing sections	6
5	Track Structure	LWR M+7 (TJ-NMJ) LWR M+8 (TJ-AYN, NMJ-MQ)
6	Depth of ballast cushion	300 mm
7	Ruling Gradient	1 in 200
8	Total No of bridges	231
9	Total No of points & crossings	74
10	Total No of curves	58
11	Total No of SEJ & LWR	44 & 22
12	No of FOB	4
13	No of limited user subway	6
14	No of ROB	7
15	No of Level Crossing	25 Engg & 7 Traffic
16	Manned inter locked LC	7 (engg) & 7 (traffic)
17	Manned Non interlocked LC	18 (engg)
18	Maximum depth of cutting	---
19	Maximum permissible speed	TJ-AYN: UP-100& DN-110 TJ-NMJ- 90 & NMJ-MQ 80
20	Cause way in this section	---
21	No of beats available	15x2
22	No of patrol men required	30+15
23	Monsoon period	1st Nov to 31st Dec
24	Monsoon patrolling period	15th Oct to 31st Dec

2.9 The Trackmen are utilized to man Engineering LC gates (Details given below).

Sl no	LC no	Location	Between	Class	Interlocked / Non Interlocked	Number of Shifts
1	305A	362/700-800	TJ-AYN	C	Interlocked	2
2	306	364/600-700	TJ-AYN	B2	Interlocked	Traffic
3	307	366/800-900	TJ-AYN	C	Interlocked	2
4	308	369/500-600	TJ-AYN	C	Non-Interlocked	2
5	310	373/500-600	TJ-AYN	C	Non-Interlocked	2
6	311A	375/900-376/000	TJ-AYN	C	Non-Interlocked	2
7	3	3/700-800	TJ-NMJ	C	Interlocked	2
8	4	5/100-200	TJ-NMJ	C	Interlocked	2
9	5	6/800-900	TJ-NMJ	C	Interlocked	2
10	6	8/300-400	TJ-NMJ	C	Interlocked	2
11	7	10/500-600	TJ-NMJ	C	Interlocked	2
12	8	10/900-11/000	TJ-NMJ	C	Interlocked	2
13	10	14/500-600	TJ-NMJ	C	Interlocked	Traffic
14	11	15/000-100	TJ-NMJ	C	Interlocked	Traffic
15	12	17/800-900	TJ-NMJ	C	Non-Interlocked	2
16	13	20/100-200	TJ-NMJ	C	Interlocked	2
17	14	22/500-600	TJ-NMJ	C	Non-Interlocked	2
18	15	24/200-300	TJ-NMJ	C	Non-Interlocked	2
19	16	26/000-100	TJ-NMJ	SPL	Interlocked	3
20	17	27/300-400	TJ-NMJ	C	Non-Interlocked	2
21	18	28/700-800	TJ-NMJ	C	Non-Interlocked	2
22	19	29/000-100	TJ-NMJ	C	Interlocked	Traffic
23	20	30/000-100	TJ-NMJ	SPL	Interlocked	Traffic
24	1	1/000-100	NMJ-MQ	SPL	Interlocked	Traffic

25	2	1/999-2/000	NMJ-MQ	C	Non-Interlocked	2
26	3	3/000-1000	NMJ-MQ	A	Interlocked	2
27	4	3/900-4/000	NMJ-MQ	C	Non-Interlocked	2
28	5	5/300-400	NMJ-MQ	C	Non-Interlocked	2
29	6	7/200-300	NMJ-MQ	C	Non-Interlocked	2
30	7	8/800-900	NMJ-MQ	C	Non-Interlocked	2
31	9	12/500-600	NMJ-MQ	C	Non-Interlocked	2
32	10	13/100-200	NMJ-MQ	C	Interlocked	Traffic

2.10 Artisan staff:

Trade	San	Act	Remarks
Sr Tech -Blacksmith Tech- I Blacksmith Tech-III Blacksmith	0 2 0	1 0 2	For routine maintenance of lifting barriers and Points and crossings, reconditioning of gang tools, opening and examination of manned and unmanned LCs, maintenance of SEJs, casual renewal of Rails / glued joints, defective welds.
Total	2	3	
Tech-III-Brick Layer Brick Layer Helper	1 1	0 0	For various kind of brick works in LCs and stations.
Total	2	0	
Tech/III/Painter Painter Helper	1 1	1 0	For various kinds of painting works.
Total	2	1	
Tech/III/Carpenter	0	0	For maintenance of wooden sleepers in girder bridge, Winch platforms in LCs (Manned) and PF struts in stations.
Tech/III/Welder	2	1	For welding activities wherever needed.
Total Artisans	8	5	

2.11.1 TROLLEY DETAILS:

No of trolleys available: Push trolley-3, Moped trolley-1 & Motor trolley-1

Push trolley inspection details from 1.9.2019 to 31.8.2020

MONTH	SSE/P.WY/TJ	JE/PWAY/BAL	JE/PWAY/NMJ
September- 2019	2	2	2
October	4	2	2
November	2	2	6
December	3	2	3
January- 2020	3	2	2
February	7	2	2
March	5	2	2
April	2	2	2
May	3	2	2
June	4	2	2
July	2	2	2
August	7	2	2
TOTAL	**44**	**24**	**29**

2.11.2 Maximum & Minimum temperatures recorded for last 3 years:

Maximum—50 ℃ Minimum—22 ℃

2.11.3 Location of stores and staff rosters: Maintained at Hqs/TJ.

Store keeper is working on the basis on EI roster at SSE/PWAY/TJ.

2.11.4 Weld failures during last three years:

No. of Weld failures			No of Track failures		
2017-18	2018-19	2019-20	2017-18	2018-19	2019-20
NIL	NIL	1	NIL	NIL	NIL

2.12 As per executive summary of the said MCNTM report para 0.13, 12.5 % LR is allowed for all non-supervisory and non-secretarial category staff. The Rational formula covers all activities as per para 0.14 of the report.

As per para 0.20 Annual Review of gang strength is to be conducted on every 1st of April continuously. IRICEN will be custodian of software for calculating man power.

EMKM (Equated Man power Kilometre) will replace ETKM (Equated Track Kilometre) as performance unit.

Equated Cost Kilometre (ECKM) can be evolved as performance unit in future.

EMKM is defined as numerically equal to 0.6 times of the number of track men required for the section for all the activities T, R, M & S as per rational formula.

2.13 TRACK MAINTENANCE ACTIVITIES

The whole activities connected to Track Maintenance are clubbed under four main categories under CMCNTM studies. They are:

a) Activity 'T' – Affected by Traffic Density
b) Activity 'R' – Not affected by Traffic Density } Primary activities
c) Activity 'M' – Miscellaneous
d) Activity 'S' – Site specific } Auxiliary activities

2.14 ACTIVITY 'T' – AFFECTED BY TRAFFIC DENSITY

T_1	-	Slack attention to	a) Bad spots
			b) Low joints (FP, welded, glued joints)
			c) SEJ (1 No. / Km)
			d) Minor curve alignment
T_2	-	For Tie tamper	a) Pre tamping operations
		Working	b) Along with tamper
			c) Post tamping operations
T_3	-	Casual Renewal of	a) Rails
			b) Sleepers
			c) Fasteners along with re gauging
T_4	-	Repair Welding	

2.15 ACTIVITY 'R' – Not affected by Traffic Density

R_1	-	Lubrication of ERCs
R_2	-	Shallow screening
R_3	-	Loading, Leading, Unloading
R_4	-	Overhauling of LC gates
R_5	-	Watching of caution spots & misc.
R_6	-	Tree cutting for visibility
R_7	-	Lubrication of Rails in Curves

R_8 - Accident Relief and carcass removal in run over cases

R_9 - Bridge, Sleeper attention & Renewal

R_{10} - Pre-monsoon attention such as clearing of drains and waterways, Cess repair, de-weeding of track and attention to cuttings & Trolley refugees.

R_{11} - Creep pulling approaches to bridges, turnout

R_{12} - Rectifying damage to LC posts and gates.

2.16 ACTIVITY 'M' – Miscellaneous

M_1 - Monsoon patrolling

M_2 - Hot weather patrolling

M_3 - Cold weather patrolling

M_4 - Watching vulnerable locations

M_5 - Gate keeping of LC gates

M_6 - Rest giving for key man

M_7 - Water man duty

M_8 - Store watch man duty

2.17 ACTIVITY 'S' – Miscellaneous

S_1 - Tunnel Maintenance

S_2 - Bridge substructure maintenance

S_3 - Long girder maintenance

S_4 - Extra maintenance due to very steep curves, deep cutting, steep gradient

S_5 - Maintenance of track on extremely bad formation

S_6 - Look out man duty

S_7 - Fog signal man duty

S_8 - Filth removal from track

S_9 - Security patrolling

S_{10} - Watching of water level in suburban section

(T.R.M.S details are enclosed as Annexure)

CHAPTER – III

3.0 CRITICAL ANALYSIS

3.1 The laying and maintenance of P.Way is a laborious task right from survey, sanction of funds, acquisition of land, construction through undulated and difficult terrains of mountains, rivers, etc. Bridges, tunnels cuttings, gradients, curves, draining of water etc., pose big challenges not only for construction but also for maintenance.

3.2 Engineering Branch in Indian Railways has progressed by leaps and bounds from the time of Clark and Robert Stephenson. Bridges and tunnels running to a length of even 7 kilometers and 350 m height, underground track running for long stretches etc., has become the order of the day. The gruesome manual maintenance of the track has given way to highly mechanized maintenance practices.

3.3 TROLLEY MOVEMENTS:

The details of Trolley inspections conducted during the last one year are 97 and in an average 8 inspections conducted every month.

3.4 SOME REFERENCES FROM MCNTM REPORT 2000

(a) The MCNTM Committee recommends that the effort to improved rail welds should receive adequate thought and that a review should made after 5 years from now, so as to avoid reduction factors to be applied for the yard stick of man power requirement for SWR/LWR track (Para 0.4).

(b) Rational formula can be amended easily by recasting the relevant tables. The Committee recommends that the Rational Formula can be reviewed once in five years and amended (Para 0.8 & 4.15)

(c) Possible man power savings by deploying on track tampers for machine packing on BG

(d) The Pilot study has given confidence that the implementation of Rationalized formula will only result in savings in manpower and

expenditure, at the same time ensuring equitable distribution of manpower in accordance with workload (Para 9.5 to 9.7 of MCNTM).

(e) As and when modernization in various sub-activities progresses, some of the sub-activities may reduce in part or vanish, or these many require less man power (Para 4.13 of MCNTM).

(f) The Committee recommended the Railway Board may order review of the Rational formula once in 5 years to incorporate the effects of modernization , such as introduction of more number of shoulder ballast cleaners, improving Rail weld technology, maintenance free level crossing track structures etc. (para 4.15 of MCNTM).

(g) **Hot Weather patrolling**

In zones of less temperature variation and in the case of track structure with adequate lateral strength, hot weather patrolling can be dispersed with as decided by CTE (Para 6.2.2 of MCNTM)

(h) **Cold weather patrolling**

CTE should authorize the need for this activity (Para 6.2.3 of MCNTM).

(i) **Gate keepers**

Only RG need be given from Trackman (para 6.2.5 of MCNTM)

3.5 The MCNTM Committee had not differentiated the requirements for SWR and LWR due to the problems then experienced in SEJ (Switch Expansion Joints) on account of poor welding technology. But the situation has now improved, and a distinction is warranted now between SWR & LWR track.

3.6 MCNTM & TRMS FORMULA

The report of MCNTM & TRMS Formula will convince us the need for rightsizing the manpower for track maintenance. It should be kept in mind that the very TRMS formula was evolved by studying the conditions existed during 1996 – 2000 period ie., when the mechanization was only in the

experimental stage and when a good portion of the lines were in MG. Though the report was accepted in 2006 only, the basic points in the report are drawn from the above period.

3.7 INFERENCES :

a) The TRMS formula was approved in 2006 and it should have been implemented everywhere now.

b) The TRMS formula itself is 16 years old and requires periodical review.

c) The CMCNTM REPORT itself calls for annual review of staff strength based on the progressive mechanization and new technologies.

d) The very discarding of basic unit of the ETKM (Equated Track Kilometre) and the replacement of the same by Equated Manpower Kilometre (EMKM) and suggestions to transform it on Equated Cost Kilometre (ECKM) underscores the stress on manpower economy and cost economy in this field. So the work study is supposed to exercise a review on the TRMS formulae itself.

3.8 EXTERNAL FACTORS

Certain external factors have also got a bearing on the manpower requirements especially under T, R, M & S activities, they are –

a) The improvements in road transport and vehicles
b) The improved availability of water, residence etc.,
c) The substitution of manual checking / testing / Inspection due to the use of machines like USFD etc.,
d) The longevity ensured due to mechanized laying of track and construction / inspection methods.
e) The supervisory element of work in the contracts.

3.9 Observation during the field study:

The work study team conducted a field study at SSE/P.WAY/TJ.

During the interaction with the SSE/P.WAY/TJ, it was stated that about 29 Track Women are available in this unit and hence difficult to allocate the work

to them. They could not be utilized as Key women or for patrolling or any Track repair works.

With regard to Track women in the division, it is suggested that Track women may be equally distributed to each section in the Division by the Sr DEN (co-ord) in consultation with the ADEN's & SSE's of the division.

Activities Recommended for Outsourcing by Rational Formula.

1. Formation of treatment Works:
2. Collection of ballast, training out ballast by material train leading ballast from stack to track, insertion of ballast in track
3. Deep screening of the ballast in track, carried out manually by deploying BCM in which case man power is provided by the contractor
4. Introduction of sub ballast and ballast layers
5. Heavy repairs to track, including lifting
6. Complete realignment of curved track
7. Through renewal of rails, Sleepers and fosterers
8. Complete renewal of points and crossings, SEJs, traps etc
9. Resurfacing of crossings and switch rails
10. Loading and unloading of P.Way materials is bulk
11. Loading out of P.Way materials for other than casual renewal
12. Security of materials kin a depot which is closed and locked
13. Painting of Rails and weld collars
14. Painting of bridge girders
15. Heavy repairs(Measurable) to formation cutting bides drains and catch water
16. Heavy repairs (measurable) to bridges, bridge protection works, river training works and tunnels.
17. Removal of major sand breaches
18. Works arising due to restoration following breach or accident
19. Clearing of rank vegetation in platforms and in the insanity of tracks in coaching and goods yards, repair depots and workshops or Engineering/Mechanical/Electrical and S & T depts.

As per TRMS formula, the following are Mandays worked out for T & R activities.

T Activity	-	11791.95 Man days *(Without shallow screening it is 9286.23)
R Activity	-	18521.17 Man days
Total	**-**	**30313.12 Man days**

***This includes Man days for Shallow screen activities.**

"T" Activity:

Under `T` activity, almost all the activities has already been carried out by the Track machines. Out of the total 11 activities under "T" the four activities (T_{2a}: Pre-tamping operations $_{3a:}$ Casual renewal of rails, T_{3b}: Casual renewal of sleepers &$T_{4:}$ Repair welding) are the major activities that require more man power comparing the other minor activities. These activities constitute more than 50% of the total work load under T activity. The other sub activities under T also do not arise often since the entire line is laid with a 60 kgs / 52 kgs rails.

"R" Activity: The following sub activities have been suggested for outsourcing;

1. R_1 - Greasing of ERCs
2. R_3 - Loading, Leading & Unloading
3. R_4 - Overhauling of LCs (suggested by CTE)
4. R_6 - Tree cutting for visibility (suggested by CTE)
5. R_7 - Lubrication of Rails in curves (suggested by CTE)
6. R_{10} - Pre-monsoon attention (suggested by CTE)
7. R_{11} - Creep pulling (suggested by Rly. Board).

Out of the total 12 activities under"R" these 7 activities listed above are the major ones that have the potential for outsourcing. . These activities constitute more than 60% of the total workload under "R" activity.

M – Activity:

Monsoon patrolling	-	2400.00	Man days
Hot weather patrolling	-	0000.00	Man days

Cold weather patrolling	-	000.00 Man days
Vulnerable locations	-	210.00 Man days
Gate keeping	-	975.00 Man days**
RG for key men	-	1065.00 Man days
Waterman	-	3234.00 Man days**
Store watchman	-	2190.00 Man days**
Total Man days	**-**	**10074.00 Man days**
Less: Waterman Man days, Stores watch men & Gate Keeper		
(3234.00+2190.00+975)		**6399.00 Man days**

		3675.00 Man days

** In the present changed scenario, waterman duty is no longer in existence anywhere in Southern Railway and as such there are 5 railway stations in this section with an inter distance of 4.5 Kms on an average, where sufficient water is available. Hence the man days allotted for waterman duty are found excess and the same has been deducted from the total man days.

** Man days given separately for gate keeper.

S – Activity:

• Bridge structure maintenance	-	146.05 Man days
• Long Girder Maintenance	-	000.00 Man days
• Extra for very sharp curves	-	176.40 Man days
• Extreme bad condition	-	000.00 Man days
• Lookout man Man days	-	000.00 Man days
• Filth removal	-	3234.00 Man days
• Security Patrolling	-	000.00 Man days
• Fog signal man	-	000.00 Man days
Total		**3556.45 Man days**
Less: Filth removal	**:**	**3234.00**

		322.45

3.10 DISALLOWED MAN DAYS IN T ACTIVITY:

(As per the recommendation of CMCNTM for outsourcing)

ACTIVITY		T activity man days	DISALLOWED MAN DAYS	
Slack attention to:		9286.23		
T-1(a)	Bad spots		35x9286.23/126	2580
1(b)	Low joints, glued joints		16x9286.23/126	1179
T-2(a)	Pre tamping operations		10x9286.23/126	737
2(b)	Along with tamper		3x9286.23/126	221
2(c)	Post tamping operations		14x/126	1032
T-3 (a)	Casual renewal of rails		6x9286.23/126	453
T-4	Repair welding		12x9286.23/126	884
Total disallowed man days				**7086**

T activity after disallowed man days: 9286.23-7086 **= 2200.23**

DISALLOWED MAN DAYS IN R ACTIVITY:

(As per the recommendation of CMCNTM for outsourcing)

ACTIVITY	R activity man days	DISALLOWED MAN DAYS	
R(1): Lubrication of ERCs	18521.17	2x18521.17/159	233
R(2): Shallow screening		55x18521.17/159	6407
R(3):Loading, leading & unloading		20x18521.17/159	2330
R(4):Overhauling of level crossing		13x18521.17/159	1514
R(11):Creep pulling		5x18521.17/159	582
Total disallowed man days			**11066**

R activity after disallowed man days: 18521.17-11066 **=7455.17**

3.13 **CALCULATION OF REQUIREMENT OF TRACK MEN:**

No. of working days	:	291
T activity : 2200.23		
R activity : 7455.17		
M activity : 3675.00		
S activity : 322.45		
TOTAL : 13652.85		
Total Man days required as T, R, and M & S for Performing Track maintenance duties	:	13652.85 Man days
No. of staff required as per T, R, M & S	:	13653 / 291
	:	46.91 Staff
		or say 47 staff
Requirement of Track maintainers as per TRMS:		47
LR@12.5% on 47	:	6
Gatekeeper	:	48
RG for Gate keeper @16.66%	:	8
		109
Requirement of Gang& key men (13x2)	:	26
Requirement of Artisan staff	:	6
Requirement of SSE+JE (3+1)	:	4
Total strength required for SSE/Pway/TJ	:	145
Less: 15% deduction as per RB letter No 11-2019/SPMPS /yardstick/2 Dated 30.06.2020.		22
Requirement of manpower as per revised yardstick=		123

The requirement of SSE/PWAY/TJ is 123 which will lead to surplus of 28.

3.14 SANCTION VS REQUIREMENT:

SL No	CATEGORY	LEVEL	SAN	ACT	REQ	SURPLUS
1	SSE/PWAY/TJ	7	4	1	3	1
2	JE/PWAY/TJ	6	1	2	1	0
3	Trainee/JE/PWAY	6	0	2	0	0
4	BLACK SMITH:					
	Sr Tech	6	0	1	0	0
	Tech-Gr I	5	2	0	2	0
	Tech Gr-II	2	0	2	0	0
5	Welder- Tech-Gr-III	2	2	1	2	0
6	Brick Layer Tech-Gr-III	2	1	0	0	1
7	Assistant Brick Layer	1	1	0	0	1
8	PAINTER:					
	Tech-Gr-II	4	1	0	1	0
	Tech-Gr-III	2	0	1	0	0
	Assistant	1	1	0	1	0
9	Track Maintainer-I	5	15	4	15	0
10	Track Maintainer-II	4	29	24	29	0
11	Track Maintainer-III	2	29	30	26	3
12	Track Maintainer-IV	1	65	93	43	22
13	Trainee TM-IV	1	0	3	0	0
14	Substitutes	1	0	2	0	0
TOTAL			151	166	123	28

Recommendation-I:
One SSE post is identified as surplus which may be surrendered and credited to the Vacancy bank.

Recommendation-II:
One post of Bricklayer Gr-III is identified as surplus which may be surrendered and credited to the Vacancy bank.

Recommendation-III:
One post of Asst Bricklayer is identified as surplus which may be surrendered and credited to the Vacancy bank

Recommendation-IV:
Three posts of Track Maintainer-III are identified as surplus which may be surrendered and credited to the Vacancy bank.

Recommendation-V:
Twenty two posts of Track Maintainer-IV are identified as surplus which may be surrendered and credited to the Vacancy bank.

(TOTAL-28 Posts)

CHAPTER -IV

4.0 PLANNING BRANCH'S a REMARKS ON CO-ORDINATING OFFICER'S VIEWS

The remarks of the coordinating officer vide letter No M6 dated 21.12.2020 is received and reproduced below with the reply of the planning branch.

CO-ORDINATING OFFICER'S VIEWS

Remarks on S activity:

Activities mentioned under S activity namely Filth removal has been totally neglected. But as per MCNTM report dated May 2007, 0.2 page 1, Activity S depends on the specific features of the P.WAY section. SSE/PWAY/TJ Jurisdiction lies in delta region where a cattle breeding is done in almost along the entire jurisdiction. Hence, apart from normal filth removal in major yards, filth removal is also mostly attributed to removal & attention of cattle run over locations. Details of such attentions over a period of one month per gang are given as under:

Details of cattle run over attentions in Gang No 7 beat between 16.11.20 to 16.12.20

Sl No	Date	Location	Men required
1	16.11.20	364/500-600	2
2	21.11.20	364/300-400	1
3	05.12.20	361/100-200	2
4	08.12.20	366/400-500	2
5	16.12.20	367/500-600	2
6	16.12.20	366/700-800	1
Total			10

Total No of attentions per gang in a month = 10

Total No of attentions in a year in SSE/PWAY/TJ Jurisdiction =10x12x11 (No of gangs) =1320 man days.

Planning Branch Reply:

After the introduction of bio toilets and LHB coaches the requirement of man power for filth removal does not arise. The very purpose of introduction of Bio toilet is to avoid the filth removal by human. Moreover the run over is not regular feature and it may be cleared with the gate keeper nearer to the incident with gang men. The data is given for a month only and in a particular gang. On production of last three years data with respect to all gang related to run over may be in a position to consider the requirement.

Hence, the remarks of CO are NOT AGREED TO.

CO-ORDINATING OFFICER'S VIEWS

LOOK OUT MAN DAYS:

This activity is closely related to track safety in caution spots and individual safety by alerting the gangs whenever a train approaches, or during line block hours or during Trolley inspection irrespective of the visibility conditions given in 5.4.2 of MCNTM report and as per para 15.09,15.18.3.5.of GRS(1976) dared 28.08.2015, 15.09,15.18.3.5.

DETAILS OF CAUTION ORDERS TAKEN

SL NO	MONTH	DAYS	REMARKS
1	December-2019	4	Steel girder bridge maintenance
2	January-2020	21	TWR, Destressing
3	February	54	TWR, Destressing, Deep screening work, Ballast unloading
4	March	37	TWR, Deep screening work, Glued Joint Renewal
5	April	2	TWR
6	May	78	TWR,LUS, Deep screening work, Glued Joint Renewal, LUS attention
7	June	88	BCM Deep screening work, TWR, Ballast unloading, LUS attention
8	July	98	BCM Deep screening work, TWR, Ballast unloading, LUS attention
9	August	92	Rail renewal, TWR, Deep screening work, O&E of LC, GJ Renewal, Point & crossing BCM, LUS attention, Manual Deep screening
10	September	44	BCM Deep screening work, GJ Renewal, LUS attention, Manual Deep screening
11	October	12	SEJ Renewal, LUS attention
12	November	13	SEJ rail renewal, Xing renewal, LUS attention
TOTAL		543	

Total No of Caution spots=543

Total No of Lookout man days=543x2 (No of shifts/on single line)=1086

Details of line block taken:

SL NO	MONTH	DAYS	REMARKS
1	December-2019	30	Steel girder bridge maintenance, Machine packing
2	January-2020	21	TWR, Destressing
3	February	54	TWR, Destressing, Deep screening work, Ballast unloading
4	March	37	TWR, Deep screening work, Glued Joint Renewal
5	April	2	TWR
6	May	58	TWR,LUS, Deep screening work, Ballast unloading
7	June	58	BCM Deep screening work, TWR, Ballast unloading, LUS, Rail renewal
8	July	67	BCM Deep screening work, TWR, Ballast unloading
9	August	63	Rail renewal, TWR,BCM Deep screening work, O&E of LC, GJ Renewal, Point & crossing BCM, Machine packing, Manual Deep screening

10	September	37	BCM Deep screening work, GJ Renewal, Machine packing, Manual deep screening
11	October	15	SEJ Renewal, Machine packing
12	November	20	SEJ rail renewal, Xing renewal, Machine packing
TOTAL		462	

Total No of line blocks=462

Total No of look out man days=462

Push trolley Inspection details from 01.09.2019 to 31.08.2020

MONTH	SSE/P.WY/TJ	JE/PWAY/BAL	JE/PWAY/NMJ	No of lookout men required
September-2019	2	2	2	12
October	4	2	2	16
November	2	2	6	20
December	3	2	3	16
January- 2020	3	2	2	14
February	7	2	2	22
March	5	2	2	18
April	2	2	2	12
May	3	2	2	14
June	4	2	2	16
July	2	2	2	12
August	7	2	2	22
TOTAL	**44**	**24**	**29**	**194**

Total No of push trolley inspection= 194

Total No of look out man days =194x2(one on each side) =388

Grand total No of look out man days:

Caution spots =1086

Line blocks = 462

Push trolley inspection= 194

Total = 1742

Planning Branch Reply:

In PWAY study, the report of MCNTM is taken as basis for calculating man power. In MCNTM report pertaining to SSE/PWAY/TJ, look out man days given as NIL. So, it may be referred to IRISEN/PUNE for necessary updating.

Hence, the remarks of CO are NOT AGREED TO.

CO-ORDINATING OFFICER'S VIEWS

Remarks on M activity:

1. **Water Man:** As per draft work study report, water man duty has been completely deducted based on the account of 4.5 km average inter-distance between railway stations. The existing inter-distance between stations is given as below:

Sl No	Between stations	Track chainages	Inter distance
1	NMJ-MQ	0.000-13.750	13.750
2	NMJ-SMM	30.400-14.500	14.900
3	SMM-TJ	14.500-0.000	14.500
4	TJ-ALK	355.000-364.000	9.000
5	ALK-BAL	364.000-373.000	9.000

Further, it is imperative to note requirement of one water man per line block is absolutely necessary. Hence, water man days given as per MCNTM 6.2.7 are restored to M activity.

Total man days required for water man duty (No of gangs) 11x294=3234

Planning Branch Reply:

Since, this jurisdiction is not isolated open area also the whole section stations all have water facility including most of the LC gates in between the stations . Also to carry required water, individual water bottles (Milton made – 2 litres.) was supplied to every Track man by the department. Hence, the work study team is not able to consider allowing of 3234 man days for water man duties.

Hence, the remarks of CO are NOT AGREED TO.

CO-ORDINATING OFFICER'S VIEWS

II. Store watch man:

Man days required under store watch man duty be taken into account since there are two stores in SSE/PWAY/TJ section. As an additional burden, one store attributed to TJ HQrs is taking care of ballast depot too. So, it is of primary importance to allocate store watch man duty.

Total man days required for store watch man = (No of stores) 2x3x365=2190.

Planning Branch Reply:

As per the data given by SSE/PWAY/TJ, it says that EI roster is followed for store watch man. Moreover, during day time the staff available in SSE office may be utilised for supplying the required items keeping the store under lock and key. One staff may be

provided for night duty for the safety of railway material. There is no provision to allocate separate man power for ballast depot.

Hence, the work study team partially considered by providing 2 staff on need basis for store watch men.

CO-ORDINATING OFFICER'S VIEWS

Calculation of gang strength as per 4.10 of MCNTM report

1. Gate keepers: Gate keeper strength has been wrongly taken as 48 instead of 51.
   Total GKs (No of LCs under class B&C) 24x2=48+ (No of LCs under SPL class) 1x3=51
   Total RG for GKs @33%of Gks=17
   Leave reserve for Gks as per 6.2.5 of MCNTM report @12.5%=6
   GK roster of three LCs devised as per HOER rules 2005 part II.8, stipulating to 72 hours per week is given below

Roster of LC NO 3 @ KM 3/700-800

SL NO	GK	SUN	MON	TUE	WED	THU	FRI	SAT
1	GK-1	00-08/ 20-24	00-08/ 20-24	00-08	08-20	08-20	08-20	R/20-24
2	GK-2	08-20	08-20	R/20-24	00-08/ 20-24	00-08/ 20-24	00-08	08-20
3	RG-GK	-	-	08-20	-	-	20-24	00-08

Roster of LC NO 4 @ KM 5/100-200

SL NO	GK	SUN	MON	TUE	WED	THU	FRI	SAT
1	GK-1	08-20	08-20	08-20	R/20-24	00-08/ 20-24	00-08/ 20-24	00-08
2	GK-2	R/20-24	00-08/ 20-24	00-08/20-24	00-08/R	08-20	08-20	08-20
3	RG-GK	00-08	-	-	08-20	-	-	20-24

Roster of LC NO 5 @ KM 6/800-900

SL NO	GK	SUN	MON	TUE	WED	THU	FRI	SAT
1	GK-1	00-08/20-24	00-08	08-20	08-20	08-20	R/20-24	00-08/20-24
2	GK-2	08-20	R/20-24	00-08/20-24	00-08/20-24	00-08	08-20	08-20
3	RG-GK	-	08-20	-	-	20-24	00-08	-

Planning Branch Reply:

The work study team provided 48 gate keepers based on the data provided by the SSE/PWAY/TJ; it says two LCs namely LC No 305A & 308 expected period of commissioning from September 2021 & April 2021 respectively.

Based on the requirement of 48 Gks RG %age is calculated @16.66%. There is no provision to be provided 33% as RG.

Hence, the work study team partially considered by providing LR @12.5% for 48 which will come to 6.

CO-ORDINATING OFFICER'S VIEWS

Requirement of trolley man:

Push trolley inspection details from 01.09.2019 to 31.08.2020

MONTH	SSE/P.WY/TJ	JE/PWAY/BAL	JE/PWAY/NMJ
September-2019	2	2	2
October	4	2	2
November	2	2	6
December	3	2	3
January- 2020	3	2	2
February	7	2	2
March	5	2	2
April	2	2	2
May	3	2	2
June	4	2	2
July	2	2	2
August	7	2	2

Total No of push trolley inspection=194

Minimum requirement of trolley man for placing a trolley is 6. Extra 2 trolley man required for JE/PWAY/BAL & NMJ will take trolley man through rotation basis from SSE/PWAY/TJ as efficient utilisation of man power.

No of trolley man required as exemption as per 4.10.1 .e of MCNTM report

6 for SSE/PWAY/TJ
4 for JE/PWAY/BAL
4 for JE/PWAY/NMJ

Planning Branch Reply:

Based on the requirement the work study team considered by providing 5 trolley men for SSE/PWAY/TJ section which may be utilised judiciously for all three sections in such a manner without affecting the work of other section.

CO-ORDINATING OFFICER'S VIEWS

Remarks on 3.13

Revised calculation of requirement of track men
No of working days
T activity: 2200.23
R activity: 7455.17
M activity: 3675+2190+3234=9099
S activity: 322.45+1320+1742=3384.45
TOTAL = 22138.85
No of staff required as per TRMS=22139/291=76 staff
LR @12.5% as per 4.10.1 a = 10
Gatekeeper = 51
RG for GKs@33% =17
LR FOR GKs @ 12.5% as per 4.10.1.c = 6
Requirement of gang mate & key men =26
LR for gang men & key men@12.5% =3
Requirement of trolley men =14
Requirement of artisan staff =6
Requirement of SSE+JE =4
Total strength required =213
Requirement of SSE/PWAY/TJ is 213.

Planning Branch Reply:

The sanction of SSE/PWAY/TJ is 151 but the coordinating officer has calculated the requirement as 213 posts is not justifiable, in view of the policy of the railway board to convert to, mechanised maintenance of the tracks instead of manual maintenance.
However, considering the views of the coordinating officer additional man power is allowed in the following areas

- LR to gate keepers
- Trolley men
- Store watch men

Revised calculation as per work study team:

No. of working days	:	291
T activity : 2200.23		
R activity : 7455.17		
M activity : 3675.00		
S activity : 322.45		
TOTAL : 13652.85		
Total Man days required as T, R, and M & S for Performing Track maintenance duties	:	13652.85 Man days
No. of staff required as per T, R, M & S	:	13653 / 291
	:	46.91 say 47 staff
Requirement of Track maintainers as per TRMS	:	47
LR@12.5% on 47	:	6
Gatekeepers	:	48
RG for Gate keeper @16.66%	:	8

LR for Gate keeper @ 12.5%	:	6
		115
Requirement of Trolley men	:	5
Requirement of store watch men	:	2
Requirement of Gang& key men (13x2)	:	26
Requirement of Artisan staff	:	6
Requirement of SSE+JE (3+1)	:	4
Total strength required for SSE/Pway/TJ	:	158
Less: 15% deduction as per RB letter No 11-2019/SPMPS /yardstick/2 Dated 30.06.2020.		24
Requirement of manpower as per revised yardstick=		134

The requirement of SSE/PWAY/TJ is 134 which will lead to surplus of 17.

Sl No	Designation	Pay matrix	san	act	Requirement	surplus
1	SSE/PWAY/TJ	7	4	1	3	1
2	JE/PWAY/TJ	6	1	2	1	0
3	Trainee/JE/PWAY	6	0	2	0	0
4	BLACK SMITH:					
	Sr Tech	6	0	1	0	0
	Tech-Gr I	5	2	0	2	0
	Tech Gr-II	2	0	2	0	0
5	Welder- Tech-Gr-III	2	2	1	2	0
6	Brick Layer Tech-Gr-III	2	1	0	0	1
7	Assistant Brick Layer	1	1	0	0	1
8	PAINTER:					
	Tech-Gr-II	4	1	0	1	0
	Tech-Gr-III	2	0	1	0	0
	Assistant	1	1	0	1	0
9	Track Maintainer-I	5	15	4	15	0
10	Track Maintainer-II	4	29	24	29	0
11	Track Maintainer-III	2	29	30	29	0
12	Track Maintainer-IV	1	65	93	51	14
13	Trainee TM-IV	1	0	3	0	0
14	Substitutes	1	0	2	0	0
TOTAL			151	166	134	17

Recommendation-I:
One SSE post is identified as surplus which may be surrendered and credited to the Vacancy bank.

Recommendation-II:

One post of Bricklayer Gr-III is identified as surplus which may be surrendered and credited to the Vacancy bank.

Recommendation-III:

One post of Asst Bricklayer is identified as surplus which may be surrendered and credited to the Vacancy bank

Recommendation-IV:

Fourteen posts of Track Maintainer-IV are identified as surplus which may be surrendered and credited to the Vacancy bank.

(TOTAL-17 Posts)

CHAPTER – V

5.0 FINANCIAL SAVINGS

5.1 If the recommendation made in the study report is implemented, the annual recurring financial savings will be as under:

Sl. No.	Category	Grade pay (Rs.)	No. of posts	Money Value (Rs.)	Annual Financial savings (Rs.)
1	SSE	4600	1	1,09,571	13,14,852
2	Bricklayer-Gr-III	1900	1	48,614	5,83,368
3	Bricklayer-Helper	1800	1	43,817	5,25,804
4	Track Maintainer-IV	1800	14	43,817	73,61,256
TOTAL			**17**		**97,85,280**

SN-2

GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS
RAILWAY BOARD

No.11-2019/SPMPS/Yardstick/2 New Delhi, dated 30.06.2020

General Managers,
All Indian Railways/ PUs

Sub: Revision of Yardsticks/ Norms of various O&M activities on the Railways

Ref: Resolution of full Board Meeting dated

Consequent upon the directive from CRB in December, 2017, a comprehensive "Manpower Strategy Note" was issued to all Zonal Railways in May, 2018. Key component of this strategy was the revision of Yardsticks/Norms of various activities on the Railways. Board in its Meeting held on 28.12.2017 decided that manpower yardsticks for various O&M activities of all departments may be reviewed on account of technological inputs, outsourcing, changes in maintenance practices.

2.0 Accordingly, in May, 2019 Zonal Railways were advised to undertake a Zero Based Review of yardsticks for all O&M activities. Based on the inputs, the detailed views were given for concluding the revision of Yardsticks. Final view has already been given on Yardsticks for Civil Engg (Trackmen), Medical, Accounts and Commercial Departments. However, the same in r/o Civil Engg.(Bridge & Works), S&T, Security, Stores, Operating, Personnel and other Miscellaneous Departments have not yet been finalized.

3.0 Pursuant to the decision taken by the Board in its meeting held on 29.06.2020, it has been decided that the Yardsticks/Norms of various O&M activities across all Departments on the Railways stand reduced by 15% on as is where basis as an interim measure w.e.f 01.07.2020. This will however not be applicable to Electrical, Mechanical and Accounts Departments where the revised Yardsticks have already been issued in September 2019.

4.0 The final Yardsticks/Norms for each discipline will be communicated subsequently with the approval of Board on case to case basis. This interim reduction will automatically get superseded once the final revision of Yardsticks/ Norms are issued.

5.0 The PCPO and PFA of concerned Zonal Railway/PU may accordingly revise the Yardsticks/Norms of various O&M activities across all Departments (except Electrical, Mechanical and Accounts) and communicate compliance to Planning Directorate.

This issues with the approval of full Board (ME,MTR,MRS/MMM,MST,MT,FC&CRB).

30/6/2020

(Sudheer Kumar)
Additional Member (Planning)
Railway Board

Copy - CRB, ME,MT,MTR,MRS/MMM,MST,FC,DG/IIR, Secy/RB,AM/Revenue

Civil Bridges

S&T

1. ii) **Deployment of staff:**

The staffs have been deployed for the following works

1. Packing work –This is to be done in 2 years
   - i. Pre tamping work
   - ii. Post tamping work
2. Boxing and deweeding every year
3. Renewal of defective sleeper
4. Renewal of defective/ineffective fittings
5. Patrolling
6. Clearing of side drain
7. Oiling and greasing of ERC
8. Attention to SEJ's location (twice in a month)
9. Attention to curve by local adjustment
10. O&E of LC's (Once in 2 years)
11. Attention to Bridge approaches and bridge portion
12. Painting of Kilometer stone , hectometer post, Bridges, Level crossing gate booms & rail fencing
13. Picking up of slacks
14. Chasing of materials
15. Electronic updation and maintenance of track maintenance activities
16. Trucking of released materials
17. Store keeping
18. Monsoon patrolling
19. Gate keeping
20. Attention to welds
21. Emergency attention to track defects
22. Attention to LWR
23. Attention to Points and crossing

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SSE/P.WAY/TJ

2. Category wise:

Sr .Clerk/Works Branch:

1. He will maintain all the works matters correspondence.
2. Preparing of indent for proceeding of materials from AMM/GOC depot.
3. Preparing of returns for P.Way charged off, Raw, Misc Monthly and check that divisional office
4. He will maintain all the ledgers pertains to tools and plants, P.Way ledger, Raw and Misc
5. He will also collect, prepare , process and send the scrap materials.

Jr. Clerk /Personnel Branch:

1. He will look after all the establishment matters of section staff
2. Preparing of passes, PTO's including Post retirement passes
3. Preparing of monthly salary bills
4. Monthly updating of leaves
5. Service register to be maintained for all Group D staffs
6. He is also looking after the SSE/Works/TJ office Staff establishment matters.

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SSE/P.WA

504683/2020/O/oDYCPLO/PLG/HQ/SR

DRV TPJ

Senior Section Engineer Unit : TJ

Segment No.	Gauge	Line / Segment Nomen-clature	Segment Limits From km.	To km.	Extra Length due to Detouring (Long km or Short km)	Length in km	GMT	Length in Km Laid With PRC Sleepers	Maintenance Type	Rainfall in cm	Length of LWR in the Segment	Length of LWR Requiring Hot Weather Patrolling	Length of LWR Requiring Cold Weather Patrolling	No. of Equivalent Turnouts on Main Line Segment Leading to Main Line / Running Yard Lines / Non Running Yard Lines	No. of Equivalent Turnouts on Main Line Segment on PRC Sleepers Leading to Main Line / Running Yard Lines / Non Running Yard Lines	Track km of The Segment
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	BG	UP THRU	354.99	376.00	0.20	21.21	11.26	21.01	MECHANISED	106.3	21.010	0.000	0.000	14.00	14.00	22.61
2	BG	DN THRU	354.99	376.00	0.20	21.21	11.26	21.01	MECHANISED	106.3	21.010	0.000	0.000	4.00	4.00	21.61
3	BG	SL	0.30	30.60	0.20	30.50	9.67	30.50	MECHANISED	106.3	30.300	0.000	0.000	9.00	9.00	31.40
4	BG	SL	0.00	13.98	0.10	14.08	2.65	14.07	MECHANISED	106.3	14.000	0.000	0.000	2.00	2.00	14.28
5			0.00			0.00										0.00
6						0.00										0.00
7						0.00										0.00
8						0.00										0.00
9						0.00										0.00
10						0.00										0.00
11						0.00										0.00
12						0.00										0.00
13						0.00										0.00
14						0.00										0.00
15						0.00										0.00
16						0.00										0.00
17						0.00										0.00
18						0.00										0.00
19						0.00										0.00
20						0.00										0.00
Total					0.70	87.00					86.320	0.000	0.000	29.00		89.9

Summary Track Data	Total Section Length	Section Length on LWR	Equivalent PRC Track Length	Turnouts on Mainline	LWR Under Hot Weather Patrolling	LWR Under Cold Weather Patrolling	Total Track km
BG	87.00 km	86.32 km	89.49 km	29.00	0.00 km	0.00 km	89.90 km
MG	0.00 km	0.00 km	0.00 km	0.00	0.00 km	0.00 km	0.00 km
NG	0.00 km	0.00 km	0.00 km	0.00	0.00 km	0.00 km	0.00 km
Total	87.00 km	86.32 km	89.49 km	29.00	0.00 km	0.00 km	89.90 km

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SSE/P WAY/TJ

504683/2020/O/oDYCPLO/PLG/HQ/SR

YARD DATA

AS ON 15-Sep-20

D/V TPJ

Senior Section Engineer Unit TJ

Serial No	Station	Gauge	Length of Lines (km)					No of Equivalent Turnouts				
			Running Yard Lines			Non Running Yard Lines		Running Yard Lines			Non Running Yard Lines	
			Machine Packed	Manually Packed	Laid on PRC Sleeper	Manually Packed	Laid on PRC Sleeper	Machine Packed	Manually Packed	Laid on PRC Sleeper	Manually Packed	Laid on PRC Sleeper
A	B	C	D	E	F	G	H	I	J	K	L	M
1	TJ	BG	6.291	0	6.291	1.731	1.731	17	0	17	1.6	1.6
2	ALK	BG	2.202	0	2.202	0	0	5.2	0	5.2	0	0
3	BAL	BG	2.294	0	2.294	0	0	6	0	6	0	0
4	SMM	BG	1.983	0	1.983	0	0	4	0	4	0	0
5	NMJ	BG	1.986	0	1.986	0.254	0.254	4	0	4	0.2	0.2
6	MQ	BG	2.372	0	2.372	0.1	0.1	6	0	6	0	0
7												
8												
9												
10												
11												
12												
13												
14												
15												
Total			17.13	0.00		2.09		42.20	0.00		1.80	

Yard Data Summary	Machine Packed RYL	Manually Packed RYL	Mannually Packed NRYL	RYL on PRC Sleeper	NRYL on PRC Sleeper
BG	21.35 km	0.00 km	2.27 km	21.35 km	2.27 km
MG	0.00 km	0.00 km	0.00 km	0.00 km	0.00 km
NG	0.00 km	0.00 km	0.00 km	0.00 km	0.00 km
Total	21.35 km	0.00 km	2.27 km	21.35 km	2.27 km

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SSE/P.WAY/TJ

DN TPJ

YARD DATA

AS ON 15-Sep-20

Senior Section Engineer Unit : TJ

Serial No	Station	Gauge	Length of Lines (km)					No of Equivalent Turnouts				
			Running Yard Lines			Non Running Yard Lines		Running Yard Lines			Non Running Yard Lines	
			Machine Packed	Manually Packed	Laid on PRC Sleeper	Manually Packed	Laid on PRC Sleeper	Machine Packed	Manually Packed	Laid on PRC Sleeper	Manually Packed	Laid on PRC Sleeper
A	B	C	D	E	F	G	H	I	J	K	L	M
1	TJ	BG	6.291	0	6.291	1.731	1.731	17	0	17	1.6	1.6
2	ALK	BG	2.202	0	2.202	0	0	5.2	0	5.2	0	0
3	BAL	BG	2.294	0	2.294	0	0	6	0	6	0	0
4	SMM	BG	1.983	0	1.983	0	0	4	0	4	0	0
5	NMJ	BG	1.986	0	1.986	0.254	0.254	4	0	4	0.2	0.2
6	MQ	BG	2.372	0	2.372	0.1	0.1	6	0	6	0	0
7												
8												
9												
10												
11												
12												
13												
14												
15												
Total			17.13	0.00		2.09		42.20	0.00		1.80	

Yard Data Summary	Machine Packed RYL	Manually Packed RYL	Mannually Packed NRYL	RYL on PRC Sleeper	NRYL on PRC Sleepe
BG	21.35 km	0.00 km	2.27 km	21.35 km	2.27 km
MG	0.00 km	0.00 km	0.00 km	0.00 km	0.00 km
NG	0.00 km	0.00 km	0.00 km	0.00 km	0.00 km

504683/2020/O/oDYCPLO/PLG/HQ/SR

Senior Section Engineer Unit No: TJ

Serial No	Gang No	Gauge	Gang Sub Section I			Gang Sub Section II			Gang Sub Section III			Gang Sub Section IV			Gang Sub Section V			No of Keymen Beats	No of Mates	Beat Length of the Gang in km	Beat Length with Poor Visibility in km	Mandays Sanctioned for Lookout	Is the Gang Length Affected by Filth
			From km	To km	Total Length with Poor Visibility	From km	To km	Total Length with Poor Visibility	From km	To km	Total Length with Poor Visibility	From km	To km	Total Length with Poor Visibility	From km	To km	Total Length with Poor Visibility						
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
1	5	BG	354.40	356.70	0.00													2	1	2.30	0.00	0.00	YES
2	6	BG	356.70	363.20	0.00													2	1	6.50	0.00	0.00	YES
3	7	BG	363.20	369.40	0.00													2	1	6.20	0.00	0.00	YES
4	8	BG	369.40	376.00	0.00													1	1	6.60	0.00	0.00	YES
5	1	BG	0.30	6.70	0.00													1	1	6.40	0.00	0.00	YES
6	2	BG	6.70	13.10	0.00													1	1	6.40	0.00	0.00	YES
7	3	BG	13.10	20.00	0.00													1	1	6.90	0.00	0.00	YES
8	4	BG	20.00	26.70	0.00													1	1	6.70	0.00	0.00	YES
9	5	BG	26.70	30.60	0.00													1	1	3.90	0.00	0.00	YES
10	1	BG	0.00	6.70	0.00													1	1	6.70	0.00	0.00	YES
11	2	BG	6.70	13.98	0.00													1	1	7.28	0.00	0.00	YES
12																				0.00	0.00	0.00	
13																				0.00	0.00	0.00	
14																				0.00	0.00	0.00	
15																				0.00	0.00	0.00	
16																				0.00	0.00	0.00	
17																				0.00	0.00	0.00	
18																				0.00	0.00	0.00	
19																				0.00	0.00	0.00	
20																				0.00	0.00	0.00	
21																				0.00	0.00	0.00	
22																				0.00	0.00	0.00	
23																				0.00	0.00	0.00	
24																				0.00	0.00	0.00	
25																				0.00	0.00	0.00	
26																				0.00	0.00	0.00	
27																				0.00	0.00	0.00	
28																				0.00	0.00	0.00	
29																				0.00	0.00	0.00	
30																				0.00	0.00	0.00	
31																				0.00	0.00	0.00	
32																				0.00	0.00	0.00	
33																				0.00	0.00	0.00	
34																				0.00	0.00	0.00	
35																				0.00	0.00	0.00	
36																				0.00	0.00	0.00	
37																				0.00	0.00	0.00	
38																				0.00	0.00	0.00	
39																				0.00	0.00	0.00	
40																				0.00	0.00	0.00	
41																				0.00	0.00	0.00	
42																				0.00	0.00	0.00	
43																				0.00	0.00	0.00	
44																				0.00	0.00	0.00	
45																				0.00	0.00	0.00	
46																				0.00	0.00	0.00	
47																							
48																				15	11	65.88	0.00
49																							
50																							

Total

Gang Data Summary							
Gauge	No of Gangs	Keymen Beats	No of Mates	Filth Affected Gangs	Mandays Required for Waterman	Mandays Required for Filth Removal	Mandays Required for RG to Keymen	Mandays Required
BG	11	15	11	11	3234.00	3234.00	1065.00	0.00
MG	0	0	0	0	0.00	0.00	0.00	0.00
NG	0	0	0	0	0.00	0.00	0.00	0.00
Total	11	15	11	11	0.00	0.00	1065.00	0.0

SSE/P.WA

504683/2020/O/oDYCPLO/PLG/HQ/SR

LC DATA

TJ

16-Sep-20

Serial No	Level Crossing No		Classification of the Level Crossing	No of Shifts	No of Tracks on the Level Crossing	Gross Mandays Required for Gate Keeping
A	B	C	D	E	F	G
1	305A	BG	ENGG DOUBLE SHIFT	2	2	730.00
2	306	BG	TRAFFIC	0	3	0.00
3	307	BG	ENGG DOUBLE SHIFT	2	2	730.00
4	308	BG	ENGG DOUBLE SHIFT	2	2	730.00
5	310	BG	ENGG DOUBLE SHIFT	2	2	730.00
6	311A	BG	ENGG DOUBLE SHIFT	2	2	730.00
7	3	BG	ENGG DOUBLE SHIFT	2	1	730.00
8	4	BG	ENGG DOUBLE SHIFT	2	1	730.00
9	5	BG	ENGG DOUBLE SHIFT	2	1	730.00
10	6	BG	ENGG DOUBLE SHIFT	2	1	730.00
11	7	BG	ENGG DOUBLE SHIFT	2	1	730.00
12	8	BG	ENGG DOUBLE SHIFT	2	1	730.00
13	10	BG	TRAFFIC	0	3	0.00
14	11	BG	TRAFFIC	0	3	0.00
15	12	BG	ENGG DOUBLE SHIFT	2	1	730.00
16	13	BG	ENGG DOUBLE SHIFT	2	1	730.00
17	14	BG	ENGG DOUBLE SHIFT	2	1	730.00
18	15	BG	ENGG DOUBLE SHIFT	2	1	730.00
19	16	BG	ENGG TRIPLE SHIFT	3	1	1095.00
20	17	BG	ENGG DOUBLE SHIFT	2	1	730.00
21	18	BG	ENGG DOUBLE SHIFT	2	1	730.00
22	19	BG	TRAFFIC	0	3	0.00
23	20	BG	TRAFFIC	0	1	0.00
24	1	BG	TRAFFIC	2	1	730.00
25	2	BG	ENGG DOUBLE SHIFT	2	1	730.00
26	3	BG	ENGG DOUBLE SHIFT	2	1	730.00
27	4	BG	ENGG DOUBLE SHIFT	2	1	730.00
28	5	BG	ENGG DOUBLE SHIFT	2	1	730.00
29	6	BG	ENGG DOUBLE SHIFT	2	1	730.00
30	7	BG	ENGG DOUBLE SHIFT	2	1	730.00
31	9	BG	ENGG DOUBLE SHIFT	2	1	730.00
32	10	BG	TRAFFIC	0	1	0.00
33				0		0.00
34				0		0.00
35				0		0.00
36				0		0.00
37				0		0.00
38				0		0.00
39				0		0.00
40				0		0.00
41				0		0.00
42				0		0.00
43				0		0.00
44				0		0.00
45				0		0.00
46				0		0.00
47				0		0.00
48				0		0.00
49				0		0.00
50				0		0.00
51				0		0.00
52				0		0.00
53				0		0.00
54				0		0.00
55				0		0.00
56				0		0.00
57				0		0.00
58				0		0.00
59				0		0.00
60				0		0.00
61				0		0.00
62				0		0.00
63				0		0.00
64				0		0.00
65				0		0.00
66				0		0.00
67				0		0.00
68				0		0.00
69				0		0.00
70				0		0.00
71				0		0.00
72				0		0.00
73				0		0.00
74				0		0.00
75				0		0.00
76				0		0.00
77				0		0.00
78				0		0.00
79				0		0.00
80				0		0.00
81				0		0.00
82				0		0.00
83				0		0.00

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SSE/P.WAY/TJ

504683/2020/O/oDYCPLO/PLG/HQ/SR

84	0		0.00
85	0		0.00
86	0		0.00
87	0		0.00
88	0		0.00
89	0		0.00
90	0		0.00
91	0		0.00
92	0		0.00
93	0		0.00
94	0		0.00
95	0		0.00
96	0		0.00
97	0		0.00
98	0		0.00
99	0		0.00
100	0		0.00
101	0		0.00
102	0		0.00
103	0		0.00
104	0		0.00
105	0		0.00
106	0		0.00
107	0		0.00
108	0		0.00
109	0		0.00
110	0		0.00
111	0		0.00
112	0		0.00
113	0		0.00
114	0		0.00
115	0		0.00
116	0		0.00
117	0		0.00
118	0		0.00
119	0		0.00
120	0		0.00
121	0		0.00
122	0		0.00
123	0		0.00
124	0		0.00
125	0		0.00
126	0		0.00
127	0		0.00
128	0		0.00
129	0		0.00
130	0		0.00
131	0		0.00
132	0		0.00
133	0		0.00
134	0		0.00
135	0		0.00
136	0		0.00
137	0		0.00
138	0		0.00
139	0		0.00
140	0		0.00
141	0		0.00
142	0		0.00
143	0		0.00
144	0		0.00
145	0		0.00
146	0		0.00
147	0		0.00
148	0		0.00
149	0		0.00
150	0		0.00
Total	51	45	18615.00

Level Crossings Summary

Guage	No of Level Crossings				Gross Mandays
	Unmanned	Single Shift	Double Shift	Triple Shift	(Gatekeeping)
BG	0	0	24	1	18615.00
MG	0	0	0	0	0.00
NG	0	0	0	0	0.00
Total	0	0	24	1	18615.00

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MONSOON / VULNERABLE LOCATION DATA

Senior Section Engineer Unit

Gauge	Patrolling Days	Monsoon Patrolling: Data of Various Beats – No of Shifts	Is the beat infested with Wild Animals/terrorists	No of Men in Each Shift	Mandays Required	Location No	No of Shifts	Gauge	No of Gate Watchmen	Mandays Required
C	D	E	F	G	H	I	J	K	L	M
BG	60	2	NO	1	120.00			BG		[illegible]
BG	60	2	NO	1	120.00			BG		[illegible]
BG	60	2	NO	1	120.00			BG		[illegible]
BG	60	2	NO	1	120.00					[illegible]
BG	60	2	NO	1	120.00					[illegible]
BG	60	2	NO	1	120.00					[illegible]
BG	60	2	NO	1	120.00					[illegible]
BG	60	2	NO	1	120.00					[illegible]
BG	60	2	NO	1	120.00					[illegible]
BG	60	2	NO	1	120.00					[illegible]
BG	75	2	NO	1	150.00					[illegible]
BG	75	2	NO	1	150.00					[illegible]
BG	75	2	NO	1	150.00					[illegible]
BG	75	2	NO	1	150.00					[illegible]
BG	75	2	NO	1	150.00					[illegible]
BG	75	2	NO	1	150.00					[illegible]
BG	75	2	NO	1	150.00					[illegible]
BG	75	2	NO	1	150.00					[illegible]
				0	0.00					[illegible]
				0	0.00					[illegible]
				0	0.00					[illegible]
				0	0.00					[illegible]
				0	0.00					[illegible]
				0	0.00					[illegible]
				0	0.00					[illegible]
				0	0.00					[illegible]
				0	0.00					[illegible]
				0	0.00					[illegible]
				0	0.00					[illegible]
				0	0.00					[illegible]
				0	0.00					[illegible]
				0	0.00					[illegible]
				0	0.00					[illegible]
				0	0.00					[illegible]
				0	0.00					[illegible]
				0	0.00					[illegible]
				0	0.00					[illegible]
				0	0.00					[illegible]
				0	0.00					[illegible]
				0	0.00					[illegible]
				0	0.00					[illegible]
				0	0.00					[illegible]
				0	0.00					[illegible]
				0	0.00					[illegible]
				0	0.00					[illegible]
				0	0.00					[illegible]
				0	0.00					
				0	0.00					
				0	0.00					
				0	0.00					

SSE/P WADI TJ

48	0	0.00	0.00
49	0	0.00	0.00
50	0	0.00	0.00
51	0	0.00	0.00
52	0	0.00	0.00
53	0	0.00	0.00
54	0	0.00	0.00
55	0	0.00	0.00
56	0	0.00	0.00
57	0	0.00	0.00
58	0	0.00	0.00
59	0	0.00	0.00
60	0	0.00	0.00
61	0	0.00	0.00
62	0	0.00	0.00
63	0	0.00	0.00
64	0	0.00	0.00
65	0	0.00	0.00
66	0	0.00	0.00
67	0	0.00	0.00
68	0	0.00	0.00
69	0	0.00	0.00
70	0	0.00	0.00
71	0	0.00	0.00
72	0	0.00	0.00
73	0	0.00	0.00
74	0	0.00	0.00
75	0	0.00	0.00
76	0	0.00	0.00
77	0	0.00	0.00
78	0	0.00	0.00
79	0	0.00	0.00
80	0	0.00	0.00
81	0	0.00	0.00
82	0	0.00	0.00
83	0	0.00	0.00
84	0	0.00	0.00
85	0	0.00	0.00
86	0	0.00	0.00
87	0	0.00	0.00
88	0	0.00	0.00
89	0	0.00	0.00
90	0	0.00	0.00
91	0	0.00	0.00
92	0	0.00	0.00
93	0	0.00	0.00
94	0	0.00	0.00
95	0	0.00	0.00
96	0	0.00	0.00
97	0	0.00	0.00
98	0	0.00	0.00
99	0	0.00	0.00
100	0	0.00	0.00
Total		2400.00	210.00

...on Patrolling Summary

...ge	No of Beats	Mandays Beat Patrolling	No of vulnerable Locations	Mandays Vulnerable Locations	Total
	18	2400.00	3	210.00	2610.00
	0	0.00	0	0.00	0.00
	0	0.00	0	0.00	0.00
	18	2400.00	3	210.00	2610.00

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Senior Section Engineer Unit TJ

Segment No.	Gauge	Segment Name	GMT	Maintenance Type	Track km of Segment	Length of LWR in the Segment	Composite Factor 1+A+B+C	Mandays Required for T Activities	Mandays Required for R Activities	Mandays for T+R
A	B	C	D	E	F	G	H	I	J	K
1	BG	UP THRU	11.3	MECHANISED	22.61	21.01	1.0040	2404.05	3594.99	5999.04
2	BG	DN THRL	11.3	MECHANISED	21.61	21.01	1.0000	2288.46	3435.99	5724.45
3	BG	SL	9.7	MECHANISED	31.40	30.30	1.0189	3271.19	4992.60	8263.79
4	BG	SL	2.7	MECHANISED	14.28	14.00	1.0757	1322.54	2270.52	3593.06
5	0	0	0.0	0	0.00	0.00	1.0000	0.00	0.00	0.00
6	0	0	0.0	0	0.00	0.00	1.0000	0.00	0.00	0.00
7	0	0	0.0	0	0.00	0.00	1.0000	0.00	0.00	0.00
8	0	0	0.0	0	0.00	0.00	1.0000	0.00	0.00	0.00
9	0	0	0.0	0	0.00	0.00	1.0000	0.00	0.00	0.00
10	0	0	0.0	0	0.00	0.00	1.0000	0.00	0.00	0.00
11	0	0	0.0	0	0.00	0.00	1.0000	0.00	0.00	0.00
12	0	0	0.0	0	0.00	0.00	1.0000	0.00	0.00	0.00
13	0	0	0.0	0	0.00	0.00	1.0000	0.00	0.00	0.00
14	0	0	0.0	0	0.00	0.00	1.0000	0.00	0.00	0.00
15	0	0	0.0	0	0.00	0.00	1.0000	0.00	0.00	0.00
16		0	0.0	0	0.00	0.00	1.0000	0.00	0.00	0.00
17		0	0.0	0	0.00		1.0000	0.00	0.00	0.00
18		0	0.0	0	0.00		1.0000	0.00	0.00	0.00
19		0	0.0	0	0.00		1.0000	0.00	0.00	0.00
20		0	0.0	0	0.00		1.0000	0.00	0.00	0.00
Total					89.9	86.32		9286.23	18521.17	27807.40

mmary Mandays T,R	Activity T	Activity R	Total Mandays
	11791.95 Mandays*	18521.17 Mandays	30313.12
	0.00 Mandays	0.00 Mandays	0.00
	0.00 Mandays	0.00 Mandays	0.00
	11791.95 Mandays	18521.17 Mandays	30313.12

ng Correction for Shallow Screening

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DIV: TPJ

MANDAYS M

Senior Section Engineer Unit Name: TJ

AS ON: 15-Sep-20

Gauge	Manpower Patrolling		Hot/Cold Weather Patrolling of LWR					Vulnerable Locations		Gate Keeping			Rest Giver for Keymen		Waterman		Store Watchman		Total Mandays Required For M Activities
	No of Beats	Mandays Required	Total Length of LWR	Length of LWR Requiring Hot Weather Patrolling	Length of LWR Requiring Cold Weather Patrolling	Mandays Required for Hot Weather Patrolling	Mandays Required for Cold Weather Patrolling	No of Locations	Mandays	No of Engg Manned Gate	Sanctioned Cadre of Gatemen	Mandays Required	No of Keymen	Mandays Required	No of Gangs	Mandays Required	No of Site Stores	Mandays Required	
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
BG	18	2400.00	86.32	0.00	0.00	0.00	0.00	3	210.00	25	60	975.00	15	1065.00	11	3234.00	2	2190.00	10074.00
MG	0	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0	0	0.00	0	0.00	0	0.00	0	0.00	0.00
NG	0	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0	0	0.00	0	0.00	0	0.00	0	0.00	0.00
TOTAL	18	2400.00	86.32	0.00	0.00	0.00	0.00	3	210.00	25	60	975.00	15	1065.00	11	3234.00	2	2190.00	10074.00

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SSE/P WAY/TJ

Div: TJ

MANDAYS 8

Senior Section Engineer Unit Name: TJ

Sr No	Gauge	Tunnel Maintenance		Bridge Substructure Maintenance			Long Girder Bridge Maintenance			Extra for very Sharp Curves		Extremely Bad Formation		Lookout Man Mandays Required	Fog Signal Man				Fifth Renewal			Security Deployment				Mandays Required For SI Activities
		Total Length in km	Mandays Required	No of Bridges	Lineal Water Way in meters	Mandays Required	No of Long Girder Bridges	Lineal Water Way of Long Girder Bridges	Mandays Required	Extra Km on > 3deg(BG) >6deg(MG)	Mandays Required	Length of Bad Formation	Mandays Required		No of Mandays Required Yr(-3)	No of Mandays Required Yr(-2)	No of Mandays Required Yr(-1)	Mandays Required	No of working in Affected Area	Mandays Required	No of Mandays Required Yr(-3)	No of Mandays Required Yr(-2)	No of Mandays Required Yr(-1)	Mandays Required	
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	BG	0.00	0.00	6	138.90	146.05	0	0.00	0.00	0.60	178.40	0.00	0.00	0.00	0	0	0	0.00	11	3234.00	0	0	0	0.00	3558.45
2	MG	0.00	0.00	0	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0	0.00	0	0.00	0	0	0	0.00	0.00
3	NG	0.00	0.00	0	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0	0.00	0	0.00	0	0	0	0.00	0.00
Total		0.00	0.00	6	138.90	146.05	0	0.00	0.00	0.60	178.40	0.00	0.00	0.00	0	0	0	0.00	11	3234.00	0	0	0	0.00	3558.45

15 Sep 20

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DIV. TPJ

GANG STRENGTH

Senior Section Engineer Unit Name: TJ

AS ON 15-Sep-20

Sr. No.	Gauge	Total Track KM	Mandays T	Mandays R	Mandays M	Mandays S	Total Mandays T+R+M+S	No of Mates & Keyman	Leave Reserve	Calculated Gang Strength	Sanctioned Gang Strength Excluding Mate, Keymen and DC Gangmen	Sanctioned Decasualised Gangmen Posts	Excess(+) Shortage(-)	Available Manpower
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	BG	89.90	11791.95	18521.17	10074.00	3556.45	43943.57	26	22	171	147	0	-24	128
2	MG	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0			0	
3	NG	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0			0	
Total	BG	89.90	11791.95	18521.17	10074.00	3556.45	43943.57	26	22	171	147	0	-24	128

7 Details of track machine works in SSE/Pway/ TJ section between 01/09/2019-01/09/2020

S.No	Name of the machine	Progress of works
1.	Ballast Cleaning Machine	36812 m
2.	Duomatic machine	208100 PSC
3.	DGS Machine	127450m
4.	Unimat	50.7 Units + 2400 m
5.	UTV	349 rails + 25 PSC
6.	CSM	8550 PSC

8 **Details of Bridges:**

S.No	Section	No of major bridges	No of minor bridges
1.	TJ-AYN	5	83
2.	TJ-NMJ	7	64
3.	NMJ-MQ	-	66
4.	MV-TJ	-	1

Note : Inclusive of 2 Steel girder bridges.

Details of vulnerable locations: 1 no

9. **No of Trollies available:** Push Trolley-3

Moped trolley – 1

Motor trolley - 1

10. **Push Trolley Inspection Details from 01.09.2019 to 31.08..2020**

Month	SSE/P.Way/TJ	JE/P.WAY/BAL	JE/P.Way/NMJ
September	2	2	2
October	4	2	2
November	2	2	6
December	3	2	3
January	3	2	2
February	7	2	2
March	5	2	2
April	2	2	2
May	3	2	2
June	4	2	2
July	2	2	2
August	7	2	2

11. **Particulars of hot/Cold weather Patrolling** :

----------Nil----------

12. **Max/Min temperature recorded for last 3 years:**

Maximum – 50

Minimum – 22

13. **Location of stores and staff rosters:**

Maintained at Hqrs/TJ.

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14.

No of weld failures		
2017-2018	2018-2019	2019-2020
Nil	Nil	1

15. **Details of outsourced activities :**

1. Deep screening by BCM between TJ-AYN (UP line) bet Km 356/6-376/0
2. Deep screening by BCM between TJ-NMJ bet Km 0/3-30/6
3. Through Weld renewal work between AMT-NMJ bet Km 11/2-30/6
4. Destressing work between TJ-AYN (Dn line)bet Km 356/0-376/0
5. Provision of LUS at LC 305 A & 308

16. **Proposal of contract for 2019-2020:**

1. Manual deep screening of loop lines at NMJ,MQ,SMM,TJ,ALK,BAL yards
2. AMC contract for a period of one year

17. **Security patrolling details:**

Conducted on 06/08/2018

18. **No of LC gate attention details :**

S.No	Name of LC	No of days attended
1.	305A	1
2.	1	5
3.	13	7
4.	311	3
5.	19	3
6.	307	5
7.	7	3
8.	16	11
9.	306	8
10.	310	5
11.	6	2
12.	3	1
13.	20	10
14.	308	10
15.	9	2
16.	17	4
17.	18	2
18.	10	4
19.	10/MQ	1
20.	11	2
21.	5	2
22.	6/MQ	1
23.	4	2
24.	8	2
25.	12	4
26.	14	1
27.	15	3

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19. **LC's expected period of commissioning:**

LC 305A- Sep 2021

LC 308 – April 2021

20. **List of small track machines available:**

S.NO	Name of the machine	Nos available
1.	Abrasive Rail cutting machine	1
2.	Rail drilling machine	3
3.	Portable DC welding generator	1
4.	Weld trimmer shearing power pack	1
5.	Compressed Air petrol Preheating equipment	1
6.	Rail cutting machine	1
7.	Rail profile weld grinding machine	2

21. **Details of registers maintained:**

Works branch:

1. K oil register
2. HSD oil register
3. Petrol register
4. Detonator register
5. Ballast ledger
6. Rainfall register
7. Tree register
8. Agreement register
9. Encroachment register
10. Machine progress register
11. Weld register
12. DMTR
13. LC census register
14. Land boundary register
15. Imprest register-3 nos

Personal Branch:

1. Pass register
2. Leave register
3. Quarters register
4. TA register
5. NDA register
6. NHA register
7. Scale check register
8. Data change register
9. Bill correspondence
10. Bill register
11. CCL register
12. Absent register
13. PME
14. IC/RC registers
15. Leave return register
16. Society register
17. Priority register
18. Movement register

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19. SR movement register
20. ID card
21. UMID
22. NPS
23. PF register
24. CEA register
25. DCP register
26. Leave account register
27. Seniority register
28. Roster register
29. Medical card register
30. Staff bio data
31. DAR register
32. Competency certificate register
33. GDCE register
34. MACP register
35. LEO register
36. Vacancy position register
37. Grievance register – 2 nos
38. Pay order register
39. Circular & Pass routes register
40. Women harassment register
41. Outward register
42. Inward register
43. Encashment register

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TJ SECTION FEATURES:

Sl. No.	TJ Section Features	
1	Route	VM-MV-TJ-TPJ-RMM TJ-NGT-KIK NMJ-MQ
2	Total length of section:	65.88 Km
3	Sub Section Jurisdiction:	
	SSE/PWAY/BAL	354/990 – 376/0 TJ – AYN (UP & DN) – No of Gangs 4
	SSE/PWAY/NMJ	0/300 – 30/500 (TJ-NMJ), (0-13/750) (NMJ-MQ) No of Gangs – 7
4	No of crossing sections	6
5	Track Structure	LWR M+ 7 (TJ-NMJ) LWR M+8 (TJ-AYN, NMJ - MQ)
6	Depth of ballast cushion	300 mm
7	Ruling Gradient	1 in 200
8	Total No of bridges	231
9	Total No of points & crossings	74
10	Total No of curves	58
11	Total No of SEJ & LWR	44, 22
12	No of FOB	4
13	No of limited user subway	6
14	No of ROB	7
15	No of Level Crossing	25 E + 7 (traffic)
16	Manned inter locked LC	7 (Engg) + 7 (traffic)
17	Manned Non interlocked LC	18 (Engg)
18	Maximum depth of cutting	-
19	Maximum permissible speed	TJ – AYN (UP) -100 (DN) – 11095 TJ – NMJ – 90 NMJ-MQ-80
20	Cause way in this section	-
21	No of beats available	15 x 2
22	No of patrol men required	30 + 15
23	Monsoon Patrolling Period	Oct 15 – Dec 31 Nov 1 – Dec 31

The present deployment of Gang mates, Key men and Trackmen of TJ Section

Gang	Station	Jurisdiction From - To	Length in Kms	Sanction					Actual				
				Gang Mate	Key Man	Track men	GK	Total	Gang Mate	Key Man	Track men	GK	Total
5	TJ	Km 354/400 - 356/700	2.3 Km	1	2	13	0	16	0	0	13	0	13
6	TJ	Km 356/700 - 363/200	6.5 Km	1	2	12	2	17	0	0	8	2	10
7	ALK	Km 363/200 - 369/400	6.2 Km	1	2	12	2	17	0	2	7	2	11
8	BAL	Km 369/400 - 376/000	6.6 Km	1	2	12	6	21	0	2	9	6	17
1	MAV	Km 0/300 - 6/700	6.4 Km	1	1	7	4	13	1	1	5	4	11
2	KXO	Km 6/700 - 13/100	6.4 Km	1	1	7	8	17	1	1	2	8	12
3	SMM	Km 13/100 - 20/000	6.9 Km	1	1	8	6	16	0	2	2	6	10
4	KYV	Km 20/000 - 26/600	6.6 Km	1	1	7	4	13	0	1	2	4	7
5	NMJ	Km 26/600 - 30/600	4 Km	1	1	9	4	15	1	1	5	4	11
6	MQ1	Km 0/500 - 6/600	6.1 Km	1	1	8	6	16	0	1	2	3	6
7	MQ2	Km 6/600 - 13/900	7.3 Km	1	1	10	6	18	1	0	3	3	7

Grand Total 179 Grand total 115